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Neuropsychological Education in Oppositional Defiant Disorder

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Нейропсихологическое обучение при оппозиционном расстройстве

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Abstract. Oppositional defiant disorder (ODD) and conduct disorders (CDs) is a prevalent condition (between 5 % and 10 %). It is common for symptoms to manifest for many years, sometimes continuing into adulthood, such as severe personality disorders, including alcohol and drug abuse and criminal behavior. Prevalence has shown to have increased considerably over the second half of the twentieth century. The historical cultural neuropsychology allows us to think and work in a new, different way, which has shown itself to be very promising, with good results. This article presents the work of our team in neuropsychological education, guided by neuropsychological rehabilitation proposed by Luria with these children and young people. It also refers the way we use the theory of the formation of mental actions step-by-step by P. Gal'perin, both in structuring the therapeutic session with the child or adolescent ODD and CD, as well as in the pedagogical work with the parents. The case A. B., 10-year-old boy, adopted at the age of five, helps to illustrate the way these cases are usually followed in child psychiatry and clinical psychology, and what may be different within the approach of historical cultural neuropsychology. A brief review of neuroscience research is presented, particularly in neuroimaging studies, so that we can better integrate the clinical work with the boy A. B. The results of our clinical practice suggest that this may be a good working approach for the treatment of ODD and CD. More systematized and extended studies are needed with a greater number of clients.

Keywords: *oppositional defiant disorder; historical-cultural neuropsychological; rehabilitation; formation of mental actions; child psychiatry; clinical psychology*

Аннотация. Оппозиционные (ODD) и кондуктивные расстройства (CDs) встречаются достаточно часто (от 5 до 10 %). Симптомы обычно проявляются в течение многих лет, иногда переходят во взрослый возраст, например, такие тяжелые расстройства личности, как злоупотребление алкоголем и наркотиками, преступное поведение. Во второй половине XX в. зафиксирован значительный рост данных состояний. Новый подход, разработанный в рамках историко-культурной нейропсихологии, позволяет по-новому взглянуть на проблему; он считается эффективным и перспективным. В статье представлены результаты работы нашей команды по нейропсихологическому обучению детей и молодых людей на основе подхода к нейропсихологической реабилитации, предложенного А. Лурия. В статье также рассматривается применение теории поэтапного формирования умственных действий П. Гальперина при выстраивании терапевтического сеанса с ребенком или подростком с подобными расстройствами, а также при педагогической работе с родителями. Случай с А. В. — 10-летним мальчиком, усыновленным в возрасте пяти лет, — помогает проиллюстрировать, как с подобными ситуациями обычно справляются в детской психиатрии и клинической психологии и каким образом лечение может отличаться при применении подхода, разработанного в рамках историко-культурной нейропсихологии. Представлен краткий обзор исследований в области нейронаук, в частности нейровизуализации, с целью выработки более комплексного подхода к лечению мальчика (случай А. В.). Результаты нашей клинической практики доказывают эффективность данного подхода при лечении оппозиционных и кондуктивных расстройств. Мы считаем, что необходимо проведение более систематизированных и расширенных исследований с привлечением большего числа пациентов.

Ключевые слова: *оппозиционное расстройство; историко-культурная нейропсихология; реабилитация; формирование умственных действий; детская психиатрия; клиническая психология*

Introduction

Oppositional defiant disorder (ODD) and conduct disorders (CDs) are characterized by antisocial behaviors outside of socially acceptable norms and often intrude on other people's expectations or rights. They form the largest single group of psychiatric disorders in older children and adolescents. Prevalence of ODD and CD together varies between 5 % and 10 %, with much variability attributed to diagnostic criteria and methods utilized in studies (Harrison et al., 2018).

According to Harrison et al. (2018), in the preschool period, oppositional defiant behavior usually manifests as defiant and aggressive behavior in the home, often with overactivity. The behaviors include disobedience, temper tantrums, physical aggression towards siblings or adults, and destructiveness. In later childhood, CD is manifested in the home as stealing, lying, and disobedience, together with verbal or physical aggression. Later, the disturbance often becomes evident outside as well as inside the home, especially at school, as truanting, delinquency, vandalism, and reckless behavior, or

as alcohol or drug abuse. Antisocial behavior among teenage girls includes spitefulness, emotional bullying of peers, and running away.

Most conduct disorder remits into adult life, although a small proportion of children with disruptive behavior problems go on to show severe antisocial difficulties well into adult life. 75 % of children with conduct disorder and 50 % of those with emotional disorders at age 10 years were still affected by these problems 4 years later (Rutter, 1972). For adolescents with substance use disorders, the consensus is that 75 % will perform normally as adults — with completion of secondary school and supportive psychosocial environments being the best predictors of more positive outcomes (Costello & Maughan, 2015).

Rates are also highest in children that have been maltreated, brought up in residential care, transferred to foster care, and in those with intellectual disability. Furthermore, prevalence has shown to have increased considerably over the second half of the twentieth century (Harrison et al., 2018).

The information that has been presented so far is enough to get our attention, and to think that it is urgent to understand and interfere at a psychological level. We speak of life stories (ontogenesis) that caused different brain organizations, and that due to this difference to an enormous difficulty or even impossibility, to integrate socially and respond to citizenship demands. After several years working in clinical neuropsychology of traumatic brain injury, stroke and learning difficulties, today our work focuses on neuropsychology of human development. ODD and CD cases are frequent in our clinic.

The theoretical reasoning that guides our practice, is the psychology of Vygotsky–Luria–Leontiev. The intervention differs little from that practiced in historical-cultural neuropsychology, or systemic-dynamic neuropsychology, in other clinical and pedagogical areas (Quintino-Aires, 2020a). But there are specificities that result from not being dealing with an acquired or genetic lesion, but from a difference in development (Quintino-Aires, 2016a, 2020b). And they are clinical processes in which the family is not a complementary part, but an integral part of the pedagogical-clinical process (Quintino-Aires, 2020b).

We divided the frames that present complaints in child psychiatry, in biological frames and psychological frames. The first, include intellectual, behavioral, or emotional changes resulting from diseases with a known biological cause. Fragile X syndrome, Down syndrome, or congenital hypothyroidism (cretinism), are examples of this category. They need medical intervention, if available. Even if in a complementary way, psychological intervention may also be present. In psychological conditions, intellectual, behavioral, or emotional changes characterize a condition resulting from a different ontogenetic process. The Hyperactivity Disorder and Attention Deficit and Oppositional defiant disorder (ODD) and conduct disorders (CDs) are included in this group by both the results of the meta-analyzes that have been published and the prognosis when efficient intervention plans are implemented (Quintino-Aires, 2012). The cases of this group need psychological intervention (neuropsychological), and sometimes, in a complementary way, also medical intervention.

When talking about psychology, and neuropsychology, it is impossible not to focus on the question of *psychopoesis*, the process of formation of the human psychological ap-

paratus, basically referred as *mental*. Also is impossible do not to mention maladaptation, the possibilities that during ontogenesis, a human does not achieve the adequate capacity to adapt to the environment which lives, as brain allows. And therefore, not able to take advantage of the possibilities and opportunities that life in society in the 21st century could provide, with equal duties and rights, with their brothers of biological species.

Understanding the psychological construction of the human being, the brain's capacity to form not only with genetic information, is already ancient in science. We can perhaps place its beginning, in a scientific approach, in the 19th century with I. Sechenov (1863/1965). Later, this understanding continues with the possibility of beginning to interpret the role of culture in brain formation with W. Wundt, spatially in his work already done in Leipzig.

But the most complete system is already developed in the twentieth century by L. S. Vygotsky, A. R. Luria, and A. N. Leontiev. Psychology, and neuropsychology, historical-cultural. When we study the higher cortical functions in the child, we find that each higher form of behaviour comes into play twice in development. "First as a collective form of behaviour, as an inter-psychological function. It is a reciprocal psychological process. One process takes place in my brain, the other process in the brain of another with whom I have an argument" (Vygotsky, 1930/1966, p. 126). He wrote: "Each higher cortical function is originally shared between two people. Later, when the resulting development of learning has occurred, then the process takes place as an intrapsychological function." The interpsychological process and the intrapsychological process for the same higher nerve activity naturally have different brain neurodynamic (Ardila, 2018; Kotik-Friedgut, 2001).

This understanding of brain development in humans is known as the Double Development Law, as you can see from what I just wrote. And by many psychologists, myself included, expresses the General Law of Psychology, or the *Dogma of Psychology*. The developmental process stems from a relationship with a "competent veteran," giving rise to the concept of ZPD, a dynamic process whereby what was inter-psychological (social) becomes intra-psychological (psychological). As Dorothy Robbins wrote, quoting Newman and Holzman (1996), "the particular relational activity that is simultaneously and makes possible the transformation of rigid behaviour (forms of live that have become alienated and fossilized) into new forms of life" (Robbins, 2003, p. 97).

Essential in the process of development is the individual's own activity upon the world, an activity mediated by instruments of culture. It is this instrumental activity that gives rise to the structuring of higher cortical functions (Luria, 1961, 1966a). It underpins the development process described in the Double Development Law. Relationship with an "other veteran" is necessary for the presentation of the behavioural activity model and, fundamentally, for the orientation of the "other veteran" during the interpsychological phase (Quintino-Aires, 2012, 2020a).

Each stage of development, and in the history of development as a result of the individual's objective activity in relation to other humans (ontogenesis), links between the components of brain functional systems change, and new constellations emerge.

Constellations which were absent at the previous stage. The development of these new and flexible relationships between brain functional components gives rise to a psychological system (Vygotsky, 1930/1996, 1934/2001). The brain substrate of mental processes is organized into complex systems distributed throughout the brain (*neoformations*), which represent intricate cooperation between different zones.

Contemporary psychology thus gives a different idea of how personality is structured and how it can be transformed. We accompanied L. S. Vygotsky when he says that "*The brain has enormous possibilities for the emergence of new [neuropsychological] systems*" (Vygotsky, 1930/1996, p. 115). Of course, such a perspective places greater responsibility on the work of psychologists and therapists. But it also opens a wide window for intervention and rehabilitation (Quintino-Aires, 2020a).

In structuring psychological (neuropsychological) systems, Vygotsky stressed the importance of *extra-cerebral* links and justified the possibility of the formation of *new brain organs*, structural changes induced in the body (brain) from the outside. This is a new form of evolution, which is observed only in humans (Luria & Homskaya, 1970). Human brains contain the conditions and possibilities for combining functional components, in a new synthesis, and new systems are structured from the outside.

> Attempts to search for the material substrate of consciousness at the level of the individual synapse or neuron (a level that, of course, plays a very important role in the basic physiological mechanisms, essential for all psychological activity) are beginning to be seen as totally useless. (Luria, 1966b, p. 222)

It is through complex and highly differentiated functional systems that the human can perform the very complex processes of recoding information, forming action programs, selecting essential connections and inhibiting intervening factors, and, finally, a comparison of the effect of your action with the original intention. And it is here that the work of the psychologist (neuropsychologist) should focus his attention on conducting the intervention of clinical cases.

> They are organs that function in the same way as the usual organs, with constant morphology, but are distinguished by being new forms that appear in the course of individual (ontogenetic) development. They are, therefore, the substrate of specific skills and functions that are formed in the course of the human appropriation of the world of objects and phenomena created by humanity, that is, of culture. (Leontiev, 1981, p. 289)

In conclusion, the brain is an organ that is made to do what it is asked to do. An organ capable of making new functional organs. In a process of appropriation, or assimilation, of culture, by its own action on culture when in a relationship with another human who has already appropriated that part of culture. The act in the world, the way it relates to you, to others and to the material world, depends on these functional organs, the new formations, arising in your ontogenesis, and therefore different from individual to individual.

And so, it is immediate to think that, just as we find equivalences in the brain organization of people in the same culture, the same can happen when life stories have similar traits and when the ways of acting in the world (personality and psychopathology) are of the same typology (Quintino-Aires, 2020b).

That is why it seems important to distinguish between biological frames and psychological frames, when we talk about frames that present complaints in child psychiatry. And the possibility to design and execute effective therapy plans under ODD and CD conditions. It is then up to the clinical psychologist to identify the neuro-dynamics of **specific** people, with **specific** behavioral, cognitive or emotional conditions that are presented to them, to design and implement a neuropsychological habilitation plan that allows that person, someone **specific**, a more adaptive way of life, ideally overcoming the psychopathological condition he presented.

It is within this approach, the historical cultural neuropsychology, our perception and understanding of the ODD and CD syndromes, what constitutes the work of neuropsychological education with these children and young people, and the way we use the Theory of the formation of mental actions step-by-step by P. Gal'perin, both in structuring the therapeutic session with the child or adolescent ODD and CD, as well as in the pedagogical work with the parents. To better understand the justification for neuropsychological skills in these cases, we start by reviewing what information neurosciences bring us about their brain organization.

What do Neurosciences Say about ODD and CD?

There is some evidence of abnormalities in the paralimbic system involved in motivation and affect, with limbic structures and the amygdala as well as the lateral orbital and ventromedial prefrontal cortices affected. Furthermore, children with conduct problems have been consistently shown to have poor executive functions — compromising their ability to achieve goals successfully through appropriate, effective actions (Harrison et al., 2018).

Today it is possible to know by imaging methods the differences in the brains of children with conduct disorders. We can thus have a better quality in the use of neuropsychological examination and in the development of therapeutic plans for neuropsychological education (habilitation) in these clinical conditions, for which in the past there were not sufficiently effective responses (theoretically oriented), and therefore also insufficiently efficient (even when done in practice).

In a meta-analysis article, Y. Yang and A. Raine (2009), point out structural and functional deficits in the prefrontal cortex in individuals with antisocial and violent behavior. The meta-analysis of 43 brain imaging studies indicates a significant reduction in prefrontal structure and function. The findings were located in the right orbito-frontal cortex (BA 11, 12 and 47), right anterior cingulate cortex (BA 24 and 32), and left dorsal lateral prefrontal cortex (BA 8, 9, 10 and 46).

L. Passamonti et al. (2012), studied the existence of an abnormal anatomical connection between the orbito-frontal cortex and the amygdala in conduct disorders. Previous studies suggested that some type of structural and functional abnormality in the connection between these two structures could contribute to the pathophysiology of the conduct disorder. Therefore, they investigated the integrity of the connection pathways in the white matter between the orbital-frontal cortex and the amygdala. They studied the integrity of the microstructure of white matter by Diffusion Tensor Imaging (DTI) in adolescents with onset of CD in childhood and controls matched for age, sex, intelligence, and socioeconomic status. The study was based on two methodologies. Voxel-based morphometry of fractional anisotropy (FA), an indicator of white matter integrity, and virtual dissection of white matter using tractography.

Adolescents with CD showed high FA values (indicating directional disorganization of the axons) in the right external capsule. The tractography showed an increase in the values of FA (greater disorganization of the axons) in the uncinate fascicle (fascicle connecting the orbital-frontal cortex with the amygdala of the temporal) in individuals with CD. These results indicate an abnormal maturation in the pathways in the white matter that are fundamental for the regulation of emotional behavior in CD. Similar studies have been carried out by E. Finger et al. (2012).

Also using DTI, they showed that the connection between the prefrontal cortex and the amygdala (uncinate fascicle) was structurally disturbed in psychopathic adults. They found the same functional changes in young people with conduct disorders and opposing challenging disorder. But despite the functional changes, they did not observe structural changes. In the opinion of the authors, this difference opens an important critical window for intervention and treatment.

G. Fairchild et al. (2012) innovated by studying particularly girls with CD. Their study was of voxel-based morphometry, of girls with CD and a control group matched for age, achievement IQ and dominant hand. Girls with CD showed a reduction in white matter in the anterior insula and the right striatum. Aggressive symptoms correlated negatively with the volume of the prefrontal cortex on the right lateral dorsum. The traits of "insensitive personality" had a positive correlation with the volume of the bilateral orbito-frontal cortex.

E. Haney-Caron, A. Caprihan, and M. Stevens (2014), studied microstructure abnormalities in the white matter of adolescents with CD paired with a control group. They used Tract-Based spatial statistics, fractional anisotropy (FA), axial diffusivity (AD) and radial diffusivity (RD). Adolescents with CD had significantly lower values of AF and AD in the frontal lobe and temporal lobe, including anterior/superior corona radiata in the frontal lobe and lower longitudinal and frontal-occipital fascicles. More accentuated due to the number of symptoms of CD. As axial diffusivity, but not radial diffusivity, differentiated the groups, the authors suggested that what would be characteristic in adolescents with CD is more the difference in the microstructure of the axons than the degree of myelination. The importance of this study, using more specific techniques, is to suggest that the differences in the white matter microstructure in antisocial adolescents go beyond

the uncinate fascicle as identified in previous DTI studies, or frontotemporal brain structures as suggested in functional neuroimaging studies.

S. Oostermeijer et al. (2016), added the longitudinal aspect to the study of the development of cortical thickness in DC. The 171 adolescents who received MRI were divided into three groups of different ages, more precisely 12, 16 and 19 years old. They observed different developmental trajectories in cortical thickness at the level of the dorsolateral prefrontal cortex, cortex of the anterior cingulate, insula and volume of the hippocampus (most marked on the right). Very interesting, the adolescents who in their course no longer met criteria for the diagnosis of CD, showed an attenuation of the deviation from the cortical thickness profile. In other words, adolescents who had previously been classified as having CD but who, over time, changed their behavior and stopped showing antisocial behavior, now showed less marked differences. The cortex/white matter ratio decreased, which may mean the formation of more fibers in the white matter during the process of "giving up on CD." In this same sense, De Brito et al., referred by S. Oostermeijer et al. (2016), had already reported a delay in the maturation of the orbito-frontal cortex and the dorsal anterior cingulate cortex in boys with CD.

K. Michalska, L. Decety, Th. Zeffiro, and B. Lahey (2014), using magnetic resonance imaging, used Voxel-based morphometry to verify the association between behavioural measures and white matter volume in whole-brain analyses. They found an inverse nonlinear association between the number of symptoms of conduct disorder and the volume of white matter in the upper left temporal groove, and only a "trend" in the right hemisphere. This association was more marked in girls.

While studying children diagnosed with ADHD, K. McLaughlin et al. (2014) studied the reduction of cortical thickness in children with psychosocial deprivation associated with institutionalization and found results that help us to think about our theme. These children were between 8 and 10 years old and were looking for whether there was a relationship between NMR images and ADHD symptoms. These children showed a diffuse reduction in the prefrontal, parietal and temporal cortical thickness. The cortical reduction was more accentuated due to the greater number of ADHD symptoms. The cortical thickness of the lateral orbito-frontal cortex, insula, inferior parietal cortex, precuneus, superior temporal cortex, and lingual gyrus, associated institutionalization with inattention and impulsivity. The cortical thickness of the supra-marginal gyrus associated only with inattention, and the thickness of the fusiform gyrus associated only with impulsivity. For the authors, the psychosocial deprivation associated with institutionalization disrupts cortical development, resulting in reduced thickness in regions such as the lower parietal cortex, precuneus and upper temporal cortex, leading to atypical function during the performance of care tasks in children with ADHD.

In summary, studies suggest that children and adolescents, ODD and CD, show a different development at the right orbito-frontal cortex, right anterior cingulate cortex, right external capsule, white substance in the anterior insula and the right striatum, left dorsolateral prefrontal cortex, and uncinate fascicle (fascicle connecting the orbital-frontal cortex with the amygdala of the temporal).

We do not yet have a systematic study on neuropsychology. But case-by-case analysis, in the clinic for two decades, seems to accompany these findings. It is very important to note that most of these studies are carried out with children and adolescents who were institutionalized, almost always at an early age and during childhood, and nothing in them was at the origin of these institutionalizations. In other words, the differences they present in brain and neurodynamic structure are not supposed to be attributed to genetic causes or to infectious or other acquired pathology. It is a neuro-ontogeny that mirrors their life stories. This interpretation is supported by the fact that adolescents who had previously been classified as having CD, but who over time changed their behavior and stopped showing antisocial behavior, later showed less marked differences (Oostermeijer et al., 2016). What encourages the neuropsychology of pedagogical intervention in promoting development and therapy in these cases.

Neuropsychological Education (Habilitation) with ODD Children and Young

The tasks that will consist of the materialization of the activity, in this case, the rehabilitating activity, are not a prebuilt and edited Kit, not even a set of tasks or activities that the therapist should follow by reading an instruction manual. On the contrary. The therapist must have the necessary training to begin by conducting a client's psychological laboratory investigation, to be able to interpret the data and connect it to the complaint given by the client or parents. And then, draw up a work plan for neuropsychological education (habilitation).

The therapist should be prepared to do the syndromic analysis (Luria, 1966a) and identify the factors (brain mechanisms) that may justify the complaint. He must have enough knowledge of systemic-dynamic neuropsychology, be able to analyze the psychological structure of his client's difficulty and understand the brain neuro-dynamics involved. This means that it is up to the therapist to design the specific work plan for that specific client. The methodology of neuropsychological rehabilitation proposed by A. R. Luria is very well described in his books (Luria, 1963, 1966b, 1970; Luria & Tsvetkova, 1987) and also in the works of specialists who continued his work (Glozman, 2016; Glozman & Nemeth, 2020; Glozman & Soboleva, 2018; Quintanar & Solovieva, 2010, 2016; Solovieva & Quintanar, 2018, 2019, 2020; Veraksa, Quintino-Aires, Leonov, & Musálek, 2018), so I will not present them here. I would just like to leave the suggestion that, since there are English editions of the works of A. R. Luria, those who do not yet know the methodology of neuropsychological rehabilitation proposed by him, start by studying his original texts.

A second core element present in the kind of treatment we are talking about here is the attention to the Step-by-Step Theory of Brain Systems Formation, proposed by P. Gal'perin (Núñez & Ramalho, 2018; Solovieva & Quintanar, 2018, 2019, 2020). It has three key elements that are important to remember: (a) orientation, (b) the actual execution, (c) action control. Guidance and control of the action taken by the client

should receive the utmost attention from the therapist. This means that the therapist must ALWAYS be mindful of client execution, guiding and controlling, with the simplicity in expression and communication that any educator is also expected to.

In the Gal'perin's theory, the formation of new mental actions takes place in stages, which are designed to allow the passage from social to individual experience. In the words of L. S. Vygotsky, the passage from the interpsychological plane to the intrapsychological plane, is always an expression of the construction of *brain neoformations*, new neuropsychological functional systems. In skill formation, it is first necessary to find a system of operations (action model), to represent it in materialized form, and finally to organize and develop training that leads to the realm of execution and its control (Quintino-Aires, 2016a, 2020a, 2020b).

Finally, in conducting our work, do we share with J. Craine, H. Gudeman, and M. Ahn (1981) the answer to the question "how can it best be done?" which they themselves posed in relation to neuropsychological rehabilitation: (1) Whenever it is necessary to work on various skills, the work sequence should recapitulate normal growth and development. That is, what first appears in human development must first be worked on in neuropsychological education / habilitation. (2) There must be an attitude of personalized attention on the part of the therapist to the trainee all the time that he is working with him. This includes a humanized posture that opens space for, even, the expression of positive and negative feelings on the part of the trainee in relation to their process. (3) Provide constant and systematic feedback, so that the client is continuously informed of the progress being made, the purpose of the exercises, and the performance of intermediate steps along the therapeutic journey. (4) Maximum stimulation, within the trainee's possibilities, never mind the amount of repetitions that are requested. To be effective, neuropsychological education / habilitation tasks must be repeated for as long as necessary. (5) In any program, it is essential to start training at the appropriate level. We consider it very important to always work at ¾ (three quarters). What does it mean? That the activity requested of the trainee must be neither too difficult nor too easy. And whenever it becomes easier for the trainee, the therapist must raise the level. (6) The increase in difficulty must happen by small increases. Some degree of solidification is essential before proceeding. (7) The therapist must be concerned with ensuring some success for the trainee's effort. (8) And insist on over-learning, that is, the possibility of the trainee performing the task is not enough.

Presentations on how the neuropsychological habilitation session with trainees is organized by us, has already been published by us in sufficient detail several times (Quintino-Aires, 2016a, 2020a, 2020b), so I think it is not justified to repeat here.

A. B., 10-Year-Old Boy. A Clinical Case

According to the parents, A. B. since he was with them (he was adopted at the age of 5 years old) shows deviant behaviors, such as stealing, picking up and storing all kinds of objects

he finds (he even got to pick up trash), lying and making up stories, hitting colleagues and be aggressive towards their parents and brother (adopted together). The information about A. B., which justified that the parents brought him to the consultation, is shown in *Table 1*.

Table 1

Clinical features of ODD and CD and complaints presented by parents at the first meeting

Clinical features of both ODD and CD (Harrison et al., 2018)	A. B., 10-year-old boy (February 7, 2020)
	Persistent abnormal conduct that is more serious than ordinary childhood mischief. The abnormal behaviours centre around defiance, aggression, and antisocial acts. The upset, disruption, and costs inflicted on the family, peer group, schools, and wider society can be considerable
In the **home** as stealing, lying, and disobedience, together with verbal or physical aggression	• Irresponsible. Just do what he wants. • Many blunders. If parents get angry, it makes it worse. • There is a game, it only lasts three days. • It is bad for the brother if he is upset. • Lie-Choro (remorse parents) — after all, it was a lie. • Steals money from parents and grandparents
Disturbance often becomes evident **outside as well** as inside the home, especially at school, as truanting, delinquency, vandalism, and reckless behaviour	• Steals money from classmates, teacher, parents, grandparents. • Steals garbage and accumulates garbage. • Reacted badly to colleagues, if upset. • Expelled from school compensation classes. • 2 months ago, he left school without anyone knowing. • He was hit by a car. • Permanently steals from schoolmates
Outros	• Smart, but unsuccessful at school. • Enuresis up to 8 years of age. • Hit the head with the hand. • Garbage (moldy bread) in the backpack. • Mom spends hours talking to him and crying (mom). • School psychologist at 7 years old. • Change schools (they did not accept that he would continue). • Psychologist at the new school at 9 years old. This one tells the parents: "He doesn't speak. Parents have to be calm". And send him to child psychiatry. • Child psychiatry: Risperidone® 0.5 mg + Methylphenidate® 18 mg)

Neuropsychological assessment is a fundamental element in the clinical process. It starts by serving as a guide for the preparation of the neuropsychological habilita-

tion plan, and the reevaluations allow a control of the results achieved. *Table 2* shows the results of interest to understand this case. It shows the first assessment, carried out on February 12, 2020, and the reevaluation after three months of neuropsychological habilitation, carried out on May 13, 2020.

Table 2

First and second neuropsychological assessment. BINeLL (Luria Laboratory Neuropsychological Research Battery)

BINeLL	1st assessment, 12 February 2020	2st assessment, 13 May 2020	OK
Brain dominance	Dominant left hemisphere, except in the concealed left-handedness tests, where it reveals a dominance of the right hemisphere (test of applause and "Napoleon's Pose"). In the test of reciprocal coordination of N. I. Ozerétzkiy, reveals delay of the contralateral hand	Dominant left hemisphere	**OK**
Motor functions	Accuracy errors in the Finger Count test. Exhaustion in the test of tightening-stretching fingers. Mirror performance in the Head test, with verbal help corrects. Poor ability to execute Dynamic Praxis. Weak Planning and Verification. No kinetic melody, no rhythm, no speed or brain mobility. Impulsivity in the execution of conditional reactions	Only mildly difficult to carry out conditional conflicting reactions	↑↑↑
Attention systems	Difficulty holding the instruction. Flat processing rate. Some difficulty in sweeping the field stimulate. Without verification. Difficulty in controlling impulsivity. Much help was needed	Normative	**OK**
Mnesic processes	With negative homogeneous interference effect in the delayed repetition. It makes independent associations with the blade, which does not link with the word	Moderate negative interference from the second group. Just an omission. Lower help needed	↑↑↑
Receptive speech	Difficulty in understanding logical-grammatical structures with inversion of the expressive and attributive genitive order. Poor image scanning and checking. Without analysis, planning and verification. Some help is needed	Normative	**OK**

End of Table 2

BINeLL	1st assessment, 12 February 2020	2st assessment, 13 May 2020	OK
Expressive speech	Difficulty scanning, analyzing, exploring the image (Plate). Difficulty getting out of the weak elements. Some help is needed	Normative	**OK**
Intellectual processes	Difficulties in understanding the meaning of the text and subtext of short stories. Without verification. Without planning. Without criticism. With impulsiveness. Poor ability to scan, check and visualize thematic illustration. Formation of concepts by cluster	Difficulty in understanding the explicit meaning of the illustration. Some help is needed	↑↑↑

In the personality exam, the Rorschach-Exner® system (Exner, 2007) that we have used in the team for many years, gives us objective information about personality characteristics, evaluated in a methodology different from that used during therapy. That is why we consider it an important clinical tool in our practice. On the other hand, as not all mental health professionals work on the Vygotsky–Luria–Leontiev cultural-historical approach, the results recorded therein are a good basis for communication about clinical cases, outside the team. In *Table 3* we present the results of interest to understand this case, in the first assessment, carried out on February 12, 2020, and in the reassessment after three months of neuropsychological habilitation, carried out on May 13, 2020.

Table 3

First and second personality assessment. Rorschach-Exner® system

Psychology	Rorschach	Norma	1st assessment 12 February 2020	1st assessment 13 May 2020	Evolution
Control of own behavior	FC : CF + + C	FC > CF + C	0 : 1	4 : 0	**OK**
Emotional mastery of behavior	C Puro	0	1	0	**OK**
Empathy	Comb : R	≥ 25 %	6 %	12 %	↑
Involvement in self-examination	FD	2	0	1	↑
Ability to form emotional bonds outside the family	COP	≥ 2	0	1	↑
Assertiveness	AG	2	0	1	↑

End of Table 3

Psychology	Rorschach	Norma	1st assessment 12 February 2020	1st assessment 13 May 2020	Evolution
Cognitive distortion in adaptation	X–%	≤ 10 %	18 %	12 %	↓
Cognitive distortion in opposition	S–%	≤ 10 %	33 %	0 %	**OK**

The differences in A. B. assessment after the three-month neuropsychological habilitation program was quite significant. Whether in the neuropsychological assessment, BINeLL — *Bateria de Investigação Neuropsicológica Laboratorial de Luria* (Luria's Laboratory of Neuropsychological Research Battery), or in the personality exam, Rorschach-Exner® system, the differences in the results are quite clear, showing the effectiveness and efficiency of the neuropsychological habilitation in the restructuring of the brain systems in these cases.

Pedagogical Work with Parents: Step-by-Step Theory of P. Gal'perin

Working with parents is essential in such a process. Parent training is used for a range of child psychiatric problems, and includes improving the skills of parents who have some difficulties and want help on parenting skills, as well as those who abuse or neglect their children and those with low intelligence. It is also used to assist parents of children with behavior problems that require special parenting skills — for example, the parents of children with conduct disorder or ADHD (Harrison et al., 2018).

Studies of the behavioral training of parents have now firmly established the effectiveness of this approach in improving parenting skills and parent-child relationships and reducing antisocial behaviour in children (Harrison et al., 2018). But it is not an easy job!!!

I remember one of my first parent training jobs about three decades ago. In the session we talked about the importance of increasing and improving the interaction with the 9-year-old son. I asked him to imagine a joint activity, the father with the son and at another time the mother with the son. No further information was provided to them. At the next session I asked them to tell me what they did and how it went. The father was very excited. They chose an electronic game. The father explained to me that twice a week the mother comes home later, and it is he who prepares dinner for the family. While he advanced dinner, the son played. When the son lost, he interrupted what he was doing in the kitchen, and came to play, until he lost it again to the son to play. I then asked him what each did when the other was playing. He explained to me that when the son played, he returned to the kitchen to cook some more; when he played, the son went to the room.

The father did not realize that there was no interaction here that could be understood as a psychological relationship. The mother had a different perspective and arrived frustrated because she had been unable to imagine any activity. The only thing they did together was Sunday afternoon. Without planning, they both lay down on the bed and started a tickling game. And they laughed a lot. This is often our first difficulty. Realize that we are going to work with parents who think interaction is an activity that they do without being together; and they do not perceive interaction as a playful and pleasurable activity, of mutual and altering initiative.

This helps us to become aware of the complexity and difficulty of our task. Parent training work can NEVER be understood as a simple delivery of information. If so, there would be no need for sessions. A small manual delivered to parents on the first contact would be sufficient. But the human mind does not work that way.

In relation to the case A. B., which is presented here, parenting orientation started in the first week in which the client started neuropsychological habilitation. Over the years, the parents' attempt to correct A. B. When the mother was very worn out, she started screaming and, in some situations, crying in front of her son. Of course, neither punishment, explanation or shouting has any effect on the development and correction of the behavior of children or adolescents (Quintino-Aires, 2012, 2016b). But from popular knowledge we have always heard that "no one is born taught." And when it comes to parenting, we are talking about perhaps the most complex of human tasks. Recalling an old Jewish proverb, "God could not accomplish everything and, therefore, created mothers." We understand that it expresses well the popular feeling of the difficulty of parenting. So, we looked for a methodology to guide us in our work (Quintino-Aires, 2020b).

Within the theory we are working on, contemporary or historical-cultural psychology, everything that today someone does alone before did it together with someone else. This is the law of double development or general law of psychology. An action initially shared between two people later becomes an individual procedure. Each development takes place first on a social level, shared with another person; then it happens at the individual level, and it is done only by the individual. "Each superior nerve function is originally shared between two people. It is a reciprocal psychological process. One process takes place in my brain, the other process in the brain of another with whom I have an argument" (Vygotsky, 1930/1996, p. 126). It is so in human development.

This is how we position ourselves in the work of neuropsychological habilitation with children and adolescents. Several years ago, we decided to follow the same orientation in parent training. But if we put ourselves in the role of the pedagogue or the therapist, who want to promote development in a human being to promote their parenting skills, how to know how to operationalize what happens between the two, which guarantees the transition to the second level of development, the level of individual achievement of the task? The answer to this question is found in the theory of the planned step-by-step formation of mental actions, by P. Gal'perin (1902–1988), which we also use to work with children and adolescents. We decided to apply the same methodology in parent training.

P. Gal'perin tried to explain how the process of forming internal mental actions in development takes place, that is, the steps through which the action goes through the process of appropriation by the individual, in the attempt (achieved) to guide the process in a more effective way pedagogically. Gal'perin works within Vygotsky's theory, and in Leontiev's theory of activity. But it unfolds, explaining each one, the stages of transformation from interpsychic to intrapsychic. Gal'perin developed "a theory to explain the ontogenetic development of psychic reality, that is, the assimilation by man of the historical-social experience and culture" (Núñez & Ramalho, 2018, p. 11). The theory operationalizes the how mental processes and the laws of their formation are formed (theoretical contribution) and presents methodological principles for effectively organizing teaching and learning processes (methodological and practical contribution), which we adopt in neuropsychological education (habilitation) work. From the beginning, we believed that this would be the guidance we needed to work with parents.

Within this approach, it is understood that human action has three functional elements: guidance, execution, and control. The therapist's intervention focuses on guidance and control since execution alone can be carried out (if the purpose is transformation and development). Proper and intended execution presupposes the existence of an *Action Guiding Base (AGB)*, which is initially in the therapist's brain. In the process of skill formation, the person appropriates, in the sense of assimilation and updating, this AGB. It is this appropriation that must be directed in the pedagogical process and will allow the trainee to be the one to guide and control the execution, that is, he is autonomous to execute it. The quality of the execution depends on the orientation, which must contain: (a) the content object of assimilation, (b) the representation of the final product of the action and its quality, (c) the representation of the order of actions and operations that must be carried out, and modes of action control (Núñez & Ramalho, 2018; Solovieva & Quintanar, 2018, 2019, 2020).

In Gal'perin's theory, the formation of new mental actions takes place in stages, which are designed to allow the passage from social to individual experience. In the words of L. S. Vygotsky, the passage from the interpsychological plane to the intrapsychological plane, is always an expression of the construction of *brain neoformations*, new neuropsychological functional systems. In skill formation, it is first necessary to find a system of operations (action model), to represent it in materialized form, and finally to organize and develop training that leads to the realm of execution and its control.

The formation of a skill is planned in three moments: (a) initial diagnosis of the development of the skill to be formed. Here the domain that the person has over the operations that enter the structure of action is established; (b) the stages of assimilation of the orientation of the action; (c) final control of the process, which more broadly should include the follow-up of the assimilation process. The objective is to diagnose the degree of real development of the skill formed, meeting the qualitative indicators established in the objectives.

Regarding the stages of assimilation of the orientation of action, and according to theory, the first is the stage of *motivation.* This is directly linked to the trainee's needs,

and it is up to the therapist, usually looking at the "help request," to focus on that person's specific needs. Of course, the link between the proposed tasks and what motivated the "call for help" is almost always not immediate. It is up to the therapist to make it explicit so that the person can make the link.

The second is the preparation phase of the AGB. Understanding a given situation is a general task of the guiding activity, which is supposed to clearly distinguish which consecutive actions comprise it. And what is the logarithm for its execution. For this, we assume with the parents from the first day that our "material of work" includes only what has happened during a week. From the last session to this one. The events of the past, because we do not have "a time travel machine," would only be idealistic forms of work; that would not allow any transformation.

The third step is the *materialized orientation* step. The activity develops between client and therapist, therefore, on the inter-psychological level. Always guided by AGB, control is the responsibility of the therapist. The cooperative, relational and guiding character is a key point in the historical-cultural approach. At this stage begins the process of assimilation, skill formation, so the AGB should progressively reduce the degree of detail.

The fourth is the orientation stage in the form of external language. After performing a required number of tasks with external support, and when this support can already be dispensed with, the skills training should continue with *external language guidance*. Speech is the highest means of regulating activity (Vygotsky, 1934/2001), and in order to achieve the autonomy that one wants to achieve, one must pass the verbal stage. Skill formation requires external and internal verbal communication, sustained by the generalizing power of the word (Núñez & Ramalho, 2018; Solovieva & Quintanar, 2018, 2019, 2020).

In this step, the activity is performed using rules and symbols (Veraksa et al., 2018). The tasks presented are like those of the materialized stage, but structured based on the possibilities that language (oral and written) offers. Communication, shared language, in close relation to action oriented, provides content and helps transform external action into internal action. And we remember here that in A. N. Leontiev's theory of activity. Leontiev, in which Gal'perin's theory begins, action and communication form a unit (Leontiev, 1981).

This stage of external language will bring what Talízina (Núñez & Ramalho, 2018; Solovieva & Quintanar, 2018, 2019, 2020) named *reflection*, the ability to be aware of what one does, to argue and explain. Comparing its activity with the model (AGB), the client learns to regulate its actions, acquiring internal control, i. e. self-regulation. Just as in the materialized stage the external support decreases until it disappears, in the external language stage it is also going to be reduced to a mental resolution. It frees itself from external speech.

The fifth stage is the orientation stage on the mental plane. The action reduces and becomes *internal speech,* where the *orientation* that directs the execution and the control of the skill becomes formed. Now there is no external help whatsoever, which means that the orientation activity here is on the intrapsychological level. We say that the skill was formed when the client:

> Develops an appropriate, conscious orientation that makes it possible, in the face of a problem situation, to represent the objectives, anticipate and plan an execution plan, and successfully resolve the situation according to the plan and according to criteria to accompany and regulate the execution of the action. (Núñez & Ramalho, 2018, p. 70; Solovieva & Quintanar, 2018, 2019, 2020)

Once the skill is formed, it is available to integrate the formation of other skills. And the formation and development of the skill must lead one to enjoy the development that the skill offers, to recreate it, to be satisfied with personal growth.

The evolution of Parent Training work is neither simple nor linear. Advances and setbacks are part of the process. It is up to the therapist to be the emotional support for discouragement. It must be he who manages the illusory hope for an immediate change in the children's behavior, which does not happen because the change takes time. Blaming without blaming when the parents' anguish begins to show (A. B.'s mother: "Fault is because I am a bad mother!"). These fears do not help, but rather harm, the evolution of the process. And it is also up to the parent training therapist to always be aware that no transformation, including that of the parents, happens from one session to the next.

Conclusion

The overall prevalence of ODD and CD together varies between 5 % and 10 %, with much variability attributed to diagnostic criteria and methods utilized in studies. Too large numbers, which require us to seek efficient therapeutic responses. Without treatment, most conduct disorder remits into adult life, although a small proportion of children with disruptive behavior problems go on to show severe antisocial difficulties well into adult life. About 40 % of the conduct-disordered children had antisocial personality disorder in their twenties, and many of the rest had persistent and widespread social difficulties below the threshold for diagnosis of a personality disorder (Harrisson et al., 2018). Historical-cultural neuropsychology seems to be a useful approach in treating Oppositional defiant disorder (ODD) and conduct disorders (CDs). The neuropsychological habilitation methodologies, developed within the approach of A. R. Luria, show good results. Especially when associated with parental training, in the methodology of step-by-step theory of Gal'perin. More systematized and extended studies are needed with a greater number of clients, studies that should be followed by fellow-up. Our clinical practice, already working for many years and many cases treated, suggests that this may be a working approach for the treatment of ODD and CD.

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